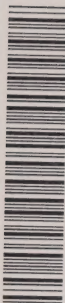


CA24N

DG

- 70R23

Government  
Publications



3 1761 11891399 5



PROVINCE OF ONTARIO

DEPARTMENT OF UNIVERSITY AFFAIRS

*General publications*


*C6-3*

RECIPIENTS OF GRANTS-IN-AID OF RESEARCH

1970-71

John P. Robarts  
Prime Minister

William G. Davis  
Minister of University  
Affairs



Digitized by the Internet Archive  
in 2023 with funding from  
University of Toronto

<https://archive.org/details/31761118913995>

## C O N T E N T S

Principles and Procedures . . . . .	5
Major Awards 1970/71 . . . . .	8
Individual Awards 1970/71	
Brock University . . . . .	10
Carleton University . . . . .	10
University of Guelph . . . . .	11
Laurentian University . . . . .	13
McMaster University . . . . .	13
University of Ottawa . . . . .	14
Queen's University . . . . .	15
Royal Botanical Gardens . . . . .	16
Royal Ontario Museum . . . . .	16
University of Toronto . . . . .	17
Trent University . . . . .	18
The University of Waterloo . . . . .	19
The University of Western Ontario . . . . .	20
University of Windsor . . . . .	20
York University . . . . .	21



## GRANTS IN AID OF RESEARCH, 1970-71

### GENERAL PRINCIPLES

The Program is intended to assist research relevant to the needs of Ontario in the pure and applied sciences, geography, mathematics, humanities and social sciences.

Two types of awards were made in 1970-71:

- a) A limited number of major awards for multi-disciplinary research projects of interest to the Province of Ontario. Each major award has a maximum value of \$50,000.
- b) Individual grants of up to \$2,000 to junior faculty.

### MAJOR AWARDS FOR MULTI-DISCIPLINARY RESEARCH PROJECTS OF INTEREST TO THE PROVINCE OF ONTARIO

The amount of each award is not specifically set but may reach a maximum of \$50,000 for a multi-disciplinary research project which is of particular interest to the Province of Ontario.

The grant may be used for salaries of technical assistants, research associates and graduate students and for equipment, supplies and travel related to the project. Regulations governing the use of funds will be the same as those established by the National Research Council for 1970-71.

If the award is to be used to support graduate student assistants, the assistants must be Canadian citizens or landed immigrants.

Successful applicants must notify the Department of University Affairs of any move or change of status.

### PROCEDURES

#### 1. Applications

No forms are provided. Applications should include a detailed description of the multi-disciplinary project, the aims and objectives of the project and its relevancy to Ontario. The name, rank and discipline of academic and professional personnel involved should be included as well as information regarding the number of graduate or research assistants who will be employed. A complete budgetary breakdown showing the various cost components is also required.



Applications are to be signed by academic personnel involved and by the appropriate senior official of the university signifying the institution's concurrence with the application.

In 1970 the deadline for applications for major awards for multi-disciplinary research was 23rd March. Successful applicants were notified of the amount of their grant in April, 1970.

## 2. Provision of Funds and Accounting for Funds

Funds for approved grants are forwarded to the university on an instalment basis, taking into account the budgetary requirements of the research project. The recipients' responsibilities are not discharged until a final statement of account and the research results have been received by the Department of University Affairs.

A statement of account is required for each grant from the university accounts office showing the financial situation as of 30th June. This statement should be signed by a senior accounting officer and by the grantee and should be forwarded to the Department of University Affairs by 15th July.

The statement of account should set forth the amounts paid for salaries and wages, equipment, supplies, and travel. Under salaries and wages the names of the personnel, rate of pay and amount paid should be listed. Under the other headings only items in excess of \$300 need be detailed. Forms are available from the business office of the university.

## 3. Reports

Upon completion of the multi-disciplinary research project a report will be forwarded to the Department of University Affairs for consideration by the General Awards Committee.

## INDIVIDUAL GRANTS TO JUNIOR FACULTY

- These awards are limited to faculty members who are
- Canadian citizens or landed immigrants who have received their doctorate degrees within the last three years or
  - landed immigrants who have come to Canada within the last three years.

Grants are given for research that is relevant to the needs of Ontario.

Recipients may not have received research grants from any other source in the previous academic year.

Grants may be used for equipment, supplies and travel specifically related to the project. Grants may not be used for salaries of full-time academic personnel, but may be used for salaries of technical assistants, consultants, research associates, and students.

If the award is to be used to support graduate student assistants, the assistants must be Canadian citizens or landed immigrants.

Successful applicants must notify the Department of University Affairs of any move or change of status.

## PROCEDURES

### 1. Applications

Applications should be made on the forms provided by the Department of University Affairs. These are available from the business officer or the officer responsible for research administration in each Ontario university.

Individual applications from faculty members must be accompanied by a personal data form completed by the applicant.

Applications are to be signed by the appropriate senior official of the university signifying the institution's concurrence with the application.

In 1970 the deadline for applications for individual awards was 9th March. Successful applicants were notified of the amount of their grant in April, 1970.

### 2. Provision of Funds and Accounting for Funds

Grants provided will be paid to the universities in two equal instalments. The recipients' responsibilities are not discharged until a final statement of account and the research results have been received by the Department of University Affairs.

A statement of account is required for each grant from the university accounts office showing the financial situation as of 30th June. This statement should be signed by a senior accounting officer and by the grantee and should be forwarded to the Department of University Affairs by 15th July.

The statement of account should set forth the amounts paid for salaries and wages, equipment, supplies and travel. Under salaries and wages the names of personnel, rate of pay and amount paid should be listed. Under the other headings only items in excess of \$300 need be detailed. Forms for this purpose are available from the business office of the university.

### 3. Reports

New projects. Recipients of individual grants are required to submit a report of accomplishment to the Department of University Affairs. Each report will be examined by the General Awards Committee.

Renewals. An applicant who is applying for support for a research project previously supported by the Department of University Affairs is required to submit with his application a report of the progress of his research to date.

GRANTS-IN-AID OF RESEARCH, 1970-71

MAJOR AWARDS FOR  
MULTI-DISCIPLINARY RESEARCH PROJECTS

Brock University

RESEARCH IN STREAM POLLUTION - involving members of the Departments of Chemistry, Biological Sciences and Geological Sciences, Dr. J.M. Miller and associates. \$40,000

University of Guelph

MAGNETIC RESONANCE STUDIES OF IRRADIATION-INDUCED PROCESSES IN BIOLOGICAL SYSTEMS - involving the Departments of Chemistry and Physics, Professor M. Fujimoto and associates. \$30,000

Lakehead University

STUDY OF AIR AND WATER POLLUTION IN NORTHWESTERN ONTARIO - involving the Departments of Chemistry, Biology and Physics, Dr. R.A. Ross and associates. \$30,000

McMaster University

INDIVIDUALIZED SCIENCE CONCEPT LEARNING - involving the Departments of Chemistry, Physics, Psychology, Dr. D.A. Humphreys and associates. \$15,000

University of Ottawa

PREDICTIVE MODELS FOR THE OTTAWA RIVER - involving the Departments of Civil Engineering, Mechanical Engineering and Biology, Dr. K. Adamowski and associates. \$46,000

Queen's University

GROUND WATER RESOURCES, ECOLOGY, GEOLOGICAL ENGINEERING AND POLLUTION IN SOUTHEASTERN ONTARIO - involving the Departments of Geology, Civil and Chemical Engineering, Doctors G.A. Bartlett, J.W. Ambrose and associates. \$35,000

A BIOLOGICAL AND GEOGRAPHICAL EVALUATION OF PATTERNS OF PHYSICAL POLLUTION IN EASTERN ONTARIO - involving the Departments of Biology and Geography, Doctors R. E. Beschel, A.A. Crowder and associates. \$45,000

THE DEVELOPMENT OF AN ARTIFICIAL EYE AND ARTIFICIAL EAR - Doctors B.J. Frost, N.A.M. Mackay and associates. \$17,000



University of Toronto

APPLIED MICROBIAL PROCESSES - involving the Departments of Chemical Engineering, Civil Engineering, Biochemistry, Faculties of Medicine and Applied Science and Engineering, Professor C.R. Phillips and associates. \$50,000

A STUDY OF ENVIRONMENTAL DISTRIBUTION OF PESTICIDES IN HOLLAND MARSH - Professors T.C. Hutchinson, J.R. Brown, R.E. Jervis and associates. \$35,000

THE INTERNAL FIXATION OF BONE FRACTURES USING COMPOSITE MATERIALS - involving the Departments of Surgery, Chemical Engineering and Applied Chemistry, Civil Engineering, Faculties of Medicine and Applied Science and Engineering, Doctors I. Macnab, R.T. Woodhams, V.R. Riley. \$25,000

The University of Waterloo

THE EFFECT OF MAGNETIC FIELDS ON THE STRUCTURE OF BIOLOGICAL LIQUIDS - involving members of the Departments of Geology, Geography and Biology, Professor K. Piekarski and associates. \$10,000

The University of Western Ontario

DEVELOPMENT OF A COMPUTER-ASSISTED PROGRAM FOR THE STORAGE AND RETRIEVAL OF ANATOMICAL PATHOLOGY DATA - Professors J.V. Frei, G. Lake, J.H. Walters and associates. \$20,000

University of Windsor

A STUDY OF PHOSPHATE POLLUTION IN THE WINDSOR DRAINAGE SYSTEM - involving the Departments of Chemical Engineering and members of the Departments of Geography and Civil Engineering, Dr. Maurice Adelman and associates. \$35,000

INVESTIGATION OF SECONDARY DOLOMITES AND SEDIMENTARY LEAD/ZINC SULPHIDE ORE BODIES IN THE BRUCE PENINSULA - involving members of the Departments of Geology, Geography, Biology, Dr. Peter Sonnenfeld and associates. \$20,000

York University

THE EFFECT OF PESTICIDES IN ECOSYSTEMS - Doctors Brian Colman, Michael G. Boyer, C.D. Fowle, J.S. Tait and associates. \$40,000

---

Total \$493,000

B R O C K

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Kerfoot, Denis E.	Geomorphological Processes Currently Operating in the Niagara Peninsula	\$2,000
		<hr/> \$2,000

C A R L E T O N

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Bayly, Isabel I.L.	Vegetation-environment Interrelation- ships in Freshwater Marshes	\$ 2,000
Carmody, George R.	Effect of Gamma Radiation on Selection for Cold Tolerance in <u>Drosophila Melanogaster</u>	2,000
Fenton, M. Brock	Fossil Vertebrates of Ontario Caves	2,000
Hardy, Kenneth	Rings of Functions on a Topological Space	1,700
Nichols, Spencer T.	Feasibility Study of a Class of Optimum Nonlinear Demodulators	2,000
Shafaat, Ahmad	Extension of Certain Structural Results on Abelian Groups to Commutative Monoids	2,000
Tan, Peter C.	Recent Advances in Mathematical Theories of Traffic Flow	2,000
Wigfield, Donald C.	Mechanistic Studies on Selected Organic Reactions	2,000
		<hr/> \$15,700

G U E L P H

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Black, John B.	The Sources of Information of Elected Officials	\$2,000
Chapman, Gerald R.	An Investigation of the Finite Generation of the Relative Cohomology Ring	2,000
Evans, Ieuan R.	Determination of the Host Range, Source and Spread of the Turnip Mosaic Virus Prevalent in Southern Ontario	2,000
Geraci, Joseph R.	The Destruction of Vitamin B <sub>1</sub> (Thiamine) by Fresh-water Fishes	2,000
Horton, Roger F.	The Photoperiodic Control of Plant Senescence	2,000
Hunter, Robert B.	Evaluation of Inbred Lines for Photo- synthetic Ability by Two Different Means	2,000
Kelly, Kenneth	The Changing Area of Marginal Land in Selected Parts of Southern Ontario During the Nineteenth Century	750
Kyba, John P.	The Sources of Information of Elected Officials	2,000
Lue Kim, Hubert	The Biology of Plant Mycoplasmas and a Search for Systemic Mycoplasmacides	2,000
Reed, John H.	Intra-gastric Photography in the Pig	1,800
Salvadori, Antonio A.	A Subset of PL/I for an Introductory Course in Computing	2,000
Sidlofsky, Samuel	The Social Integration of Immigrants and Internal Migrants Within a Non-metropolitan Urban Industrial Centre of Ontario	2,000
Slocombe, Joseph O.D.	Examination of Naturally Acquired Trichostrongyle Infection in Cattle	2,000
Stewart, Neil F.	Realistic, Guaranteed Error Bounds for Ordinary Differential Equations	1,000

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Sutton, John C.	Effect of Vesicular-Arbuscular Mycorrhizae on Development of Diseases Caused by Root-infecting Fungi	\$2,000
Usborne, W. Ronald	The Effect of Population Density and Pre- slaughter Handling on the Development of Pale, Soft, Exudative, Porcine Musculture	2,000
Walker, Robert E.	Effects of Varying Patterns of Spring Emergence on the Social Behaviour, Local Distribution, and Natalivity of Woodchucks ( <u>Marmota Monax Rufescens</u> ) in southern Ontario	2,000
Wright, Russell E.	Distribution and Incidence of Arthropod Vectors in Ontario	2,000
		<hr/> \$33,550



L A U R E N T I A N

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Lee, Augustine K.K.	Oscillating Chemical Reactions in the Homogeneous Phase	\$2,000
Pearson, David A.B.	The Petrology, Conditions of Deposition and Diagenesis of the Espanola Limestone of the Huronian	2,000
		<hr/> \$4,000

M C M A S T E R

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Anderson, David L.	The Role of Change Agents in an Innovation Diffusion System	\$2,000
Hebden, Michael D.	A Study of the Application of Non-Linear Programming Techniques to Problems Arising in Constrained Function Approximation	2,000
Stopher, Peter R.	The Development of Behavioral, Multiple Choice Models of Travel Mode Choice	2,000
		<hr/> \$6,000

O T T A W A

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Adamowski, Kazimierz	Ottawa River Flow as a Stochastic Process	\$ 2,000
Bauer, Gunther E.A.	Minimum Bracing Requirements for Trench Excavation	2,000
Bausenhart, Werner A.	Linguistic Geography of Ontario German	2,000
Brodersen, Kenneth T.	Effects of Waste Constituents on the Performance of Biological Waste Treatment Facilities	2,000
Closs, Michael P.	Quadratic Structures on a Differentiable Manifold	600
Cronan, David S.	Geochemistry of Ferromanganese Deposits from Ontario Lakes	1,750
Demers, Luc	Characteristic Classes of General Fibrations	2,000
Lunardini, Virgil	Thermal Properties of Permafrost	2,000
Newman, James A.	The Behaviour of Liquid Fuels at High Pressures	2,000
Reed, Robert M.	A Study of the Effects of Industrial Air Pollution on Forest Ecosystems in the Sudbury, Ontario Region	2,000
Tross, Ralph G.	Cell Model of a Fluid and of an Ising Ferromagnet with Long-range Interactions	2,000
		<hr/> \$20,350

Q U E E N ' S

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Bates, Duane A.	The Status of Music Education in the Cities of Southern Ontario (having a population of over 100,000), Comparing the School Years 1959-60, with 1969-70	\$1,000
Bayoumi, Mohamed	Optimization of Direct Digital Control Systems	2,000
Calder, Peter N.	Correlation of Rock Stress and Resistivity	2,000
Crowley, Ronald W.	Employment Structure and Specialization in Canadian Cities	2,000
Dawson, Graham E.	Power System Test Model	2,000
Maxwell, James D.	Part-time Mandarins: Royal Commissions and Social Change in Canada 1867-1966 - A Study in Political Sociology	2,000
Maxwell, Mary P.	Social Structure, Socialization and Social Class in a Private School for Girls	1,500
Mitchell, Robert H.	Computer-aided Design of Microwave Integrated Circuits	2,000
Mitchell, Robert J.	Stability of River Banks and Lake Shores	1,800
Ongley, Edwin D.	Hydrological Investigation of Runoff Patterns in Ontario	1,600
Racz, William J.	Drug Metabolism in Cell Culture	2,000
Sen, Paresh C.	Solid State Control of Electric Drive Systems	2,000
Tsurumi, Hiroki	Time-lag Patterns of Wages, Prices, Investment, and Unemployment in Canadian Manufacturing Industries	2,000
Vreeken, Willem J.	Quaternary Geography of the Champlain Sea and its Relation to the Lake Iroquois Basin	2,000
Wilton, David A.	An Econometric Evaluation of the Economic Effects of the Canadian Automobile Agreement 1965	2,000

---

\$27,900

R O Y A L   B O T A N I C A L   G A R D E N S

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Rice, Peter F.	Studies on Control and Infection Biology of Black Spot ( <u>Diplocarpon Rosae</u> ) on <u>Rosa</u> spp.	\$1,800
		<hr/> \$1,800

R O Y A L   O N T A R I O   M U S E U M

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Barr, David W.	Systematics of the Immature Stages of Freshwater Mites	\$2,000
Gait, Robert I.	Preparation of X-ray Diffraction Data for Mineral Specimens in the Collections of the Royal Ontario Museum	2,000
McGowan, Christopher	An Investigation into the Geochemistry and Fine Structure of Fossil Vertebrate Bone	2,000
Wicks, Frederick J.	Investigations on Serpentine Minerals and the Serpentinization Process	2,000
		<hr/> \$8,000



T O R O N T O

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Cave, Peter W.	A Study of the Development, Attributes and Potential of Southern Ontario Landscapes	\$1,050
Finley, Gordon E.	The Development of Persuasive Skills in Children	2,000
Flanagan, Ralph C.	Advanced Methods and Analysis of the Attitude Control of Space Vehicles	2,000
Graham, Robert H.	Theoretical Elementary Particle Research	2,000
Joy, Michael G.	An Investigation of Performance Criteria for Gamma-ray Cameras	2,000
Keenan, Frederick J.	Combined Stress Behaviour of Wood	2,000
Kingsley, Van V.	The Microbiota of Ontario Insects	2,000
Lipson, John D.	1. Programming Tools and Algorithms for Symbolic Computation	
	2. Automata as Universal Algebras	2,000
Locke, John W.	Investigation of Optical Methods for Picture Processing	2,000
McCammond, David	A Design Procedure for Plastic Components Subjected to Complex Loading	2,000
Melbye, Floyd J.	The Kleinburg Ossuary Project	2,000
Morsink, Willem A.G.	Auxin-synergists in Rooting of Cuttings	2,000
Reid, Lloyd D.	Engineering Models for Flight Transportation	2,000
Stegeman, George I.A.	Light Scattering from Thermal Surface Acoustic Modes in Solids	2,000
Steuart, Gerald N.	Gate Position Requirements at Air Carrier Airports	2,000
Tepperman, Lorne J.	Family Compact: The Structure of an Elite Through Six Generations	2,000
de Toledo, Leyla	The Relationship Among Classically Conditioned Responses in Rats	2,000

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Trefler, Martin	A Study of the Far Infrared Properties of Solids Using Fourier Transform Spectroscopy	\$ 2,000
Turner, Alan K.F.	Quantitative Methods for Stream Classification	2,000
Walker, Kenneth N.	Comparative Study of Canadian Students	2,000
Youson, John H.	Light and Electron Microscope Structure of Developmental, Functional, and Degenerative Changes in the Kidney of Ammocoetes and Adult Sea Lamprey, <u>Petromyzon Marinus</u> L. of the Great Lakes	2,000
		<hr/> \$41,050

T R E N T

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Maxwell, Edward A.	1) An Alternate Measure of Independence in Contingency Tables	
	2) Practical Applications of Statistics	\$1,500
		<hr/> \$1,500

W A T E R L O O

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Downer, Roger G.H.	Lipid Uptake and Utilisation in Insects	\$ 2,000
Gowda, C.V. Byre	Elasto-plastic Deformation Problems in Members with Notches and Cracks	2,000
Hollands, Kenneth G.	Precise Measurement of Natural Convection Heat Transfer Through a Horizontal Layer of Gas Heated from Below	2,000
Houston, Michael E.	Effect of Anabolic Steroid Danabol at the Molecular Level	2,000
Kerton, Robert R.	Some Economic Implications of Restrictive Store Closing Legislation	2,000
Krishnasamy, Settiana G.	Study of Ductile Structural Components Under Low Cycle Fatigue Conditions	2,000
Prentice, Ross L.	Structural Inference for Experiments Typically Analyzed by the Techniques of Conventional Experimental Design, and Comparison of Fiducial, Structural and Bayesian Inference	2,000
Rickert, William S.	The Structure of Collagen and its Relationship to Aging	2,000
		<hr/> \$16,000

W E S T E R N

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Digby, Peter J.	Dynamic Fracture in Stressed Bodies	\$2,000
Ebanks, Gosport E.	Migrants to and from London, Ontario	2,000
Guinsburg, Thomas N.	Isolationism and Neo-isolationism in America: A Comparative Study	2,000
Newkirk, Rosemary L.	Study of Student Performance in Learner Controlled Computer Assisted Instruction Lessons With and Without Periodic Compulsory Criteria	2,000
Nobbe, Charles E.	A Sociological and Demographic Analysis of Residential Mobility	2,000
Okroku, Ishmael O.	Bases of Electoral Support in London, Ontario	2,000
Osborn, Richard W.	Attitudes Towards Health Care Utilization	2,000
Skidmore, William L.	Conceptual Continuities Between Social and Economic Theory	1,850
		<hr/> \$15,850

W I N D S O R

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Jullien, Graham A.	To Investigate the Application of Digital Computers to the Instrumentation and Control of Noisy Processes	\$2,000
Lees, Leonard H.	Multivariable Control	2,000
Shridhar, Malayappan	Computer Control of Electroheat Processes	2,000
		<hr/> \$6,000



Y O R K

<u>Name</u>	<u>Project title</u>	<u>Amount of award</u>
Abella, Irving A.	The Struggle for Industrial Unionism in Canada: The CIO, The Communist Party and The Canadian Congress of Labour, 1936-56	\$2,000
Brookes, Ian A.	Geomorphology of the Noisy River Valley and Environs, Grey, Dufferin, and Simcoe Counties, Ontario	1,275
Brown, Richard L.W.	Embeddings and Immersions of Manifolds	900
Cameron, Duncan McL.	Stability in Quasi-simple Natural Ecosystem	2,000
Innes, Christopher D.	Piscator's Influence on the Development of Modern German Drama	1,400
Kuin, Rutger J.P.	A Bibliography of the Works of Sir Philip Sidney	1,500
Prince, Robert H.	High-energy Molecular Beam Production	2,000
		<hr/> \$11,075





